

Response to Office Action  
Serial No. 09/781,667  
Group Art Unit: 2862

25. (AMENDED) The apparatus defined in claim 23 further comprising means to change the shape of the ~~partially saturated casing area at near practical saturation~~.

26. (TWICE AMENDED) The apparatus defined in claim 23 further comprising means to modify the relative permeability of the ~~partially saturated casing at near practical saturation~~.

27. (AMENDED) The apparatus defined in claim 23 further comprising means to modify the ~~partially saturated casing at near practical saturation~~ in relation to the saturation of the casing proximate to one or more receivers.

#### PROVISIONAL DOUBLE PATENTING

Please enter the terminal disclaimers to obviate a provisional double patenting rejection applicable to pending applications 09/716,340 and 09/946,692.

#### REMARKS

##### THE REJECTION OF CLAIMS UNDER 35 U.S.C. §112, 2nd PARAGRAPH

The Examiner has objected to the text of the specification on the basis that it is not clear what the Applicant means by the term "partial saturation." The Examiner states that a material is either saturated or unsaturated. It is the position of the Applicant that established technical literature recognizes that a material may be subjected to a magnetic flux density such that its permeability is significantly lowered, but that it is not completely saturated. This term has been used to describe the state of material at the upper knee of the BH curve. See for example the text Introduction to Electric Circuits, 4<sup>th</sup> ed. Jackson, at page 211-212, stating practical saturation is "the flux density beyond which it is impractical to magnetize a certain magnetic material."

Please also note that this identical issue was believed to have been satisfactorily resolved with the Examiner in this manner in the prosecution of

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application serial number 09/946692, with Notice of Allowance mailed January 15, 2003. Consistent with that understanding, the Applicant has amended the claims as described above. The Applicant respectfully submits that the claims 23 through 30, as amended, should now be in order for allowance.

The Examiner has rejected claim 35 as failing to disclose the purpose of measuring the conductivity of the casing proximate to the logging tool in induction logging. The Examiner has also rejected claim 36 as failing to disclose the need to measure the permeability of the casing proximate to the apparatus while the casing is stature to reduce its permeability to zero.

It is the position of the Applicant that one aspect of its invention is the ability to receive electromagnetic signals through electrically conductive and magnetically permeable materials. These materials have traditionally been barrier materials to such signals. It is also known that the conductivity and permeability properties vary among differing material. Further, materials that may otherwise be identical may have differing properties due to variations in the manufacturing process. Therefore, in evaluating the information of a geologic formation derived from electromagnetic signals transmitted through electrically conductive and magnetically permeable material, the conductivity or permeability may be important variables for consideration. Accordingly, it is the Applicant's position, that each claim, read by a person skilled in the technology and in conjunction with the specification, does disclose the purpose of the claim elements. (It is noted that this issue was subject of the Examiner's First Office Action. Therefore, the Applicant intends to contact the Examiner by telephone to obtain a better understanding of the rejection.)

In regard to the Examiner's objection to the drawings not disclosing the embodiment of the invention subject of claim 22, please note that claim 22 states:

“(AMENDED) The apparatus defined in claim 1 wherein a plurality of saturation inducers, transmitters and receivers are

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oriented in different directions radially from the axial length of the casing."

It is the Applicant's position that Figures 8 and 30 each illustrate a plurality of inducers, transmitters and receivers oriented in different radial directions. Figure 8 illustrates two sets of 4 saturation inducers 501 oriented radially 90° to the other. Also the upper set of 4 saturation inducers each is used in conjunction with a separate transmitter 300. The lower set of 4 saturation inducers are each used in conjunction with four separate receivers 580. Similarly, Figure 30 illustrates a set of 6 saturation inducers 500A – 500E oriented radially about a well casing 100. The Figure shows that each inducer 500 can be used in conjunction with one or both of a transmitter 300 or receiver 580. Both Figures 8 and 30 illustrate the "axial length of the casing" sufficiently for a person skilled in the technology. Therefore, it is the Applicant's position that elements of claim 22 are described by the specification and drawings, particularly when the specification and drawings are read as a whole.

#### THE REJECTION OF CLAIMS FOR PROVISIONAL DOUBLE PATENTING

In regard to the Examiner's provisional rejection for provisional double patenting, the Applicant has executed the required terminal disclaimers. It should be noted that notice of allowance has been received for both applications.

#### THE REJECTION OF CLAIMS UNDER 35 U.S.C. §103

As to the Examiner's rejection of claims under 35 U.S.C. Section 103, it is the intent of the Applicant to discuss the basis of the rejection by telephone conference. It is the Applicant's belief that it has already responded to many, if not all, of the issues stated in the Examiner's February 18, 2003 office action. It is respectfully suggested that the Applicant may not appreciate or fully understand the basis of the Examiner's rejections.

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In addition, the Applicant traverses the Examiner's assertion that it would have been obvious to a person skilled in the art to configure a saturating inducer for engaging the magnetic flux with a portion of the casing without electrical contact between the saturating inducer and the casing for improving the logging tool. It is the Applicant's position that Gianzero patent teaches away from the Applicant's invention of in view of Gianzero's express teach of the need for a good electrical contact between the well casing and the sensor device. The Examiner has not provided any reference to art suggesting or pointing to the teaching of the Applicant's invention. Further, claims 2 through 42 are dependant upon Applicant's claim 1. The Applicant respectfully suggests, inter alia, that having acknowledged that all elements of claim 1 are not taught by Gianzero, the Examiner may not use the Gianzero patent alone to reject the Applicant's invention for obviousness.

The Examiner has correctly drawn the Applicant's attention to Figure 15 of Gainzero, along with the accompanying text appearing in column 11, beginning at line 55 and continuing to column 12, line 12. However, it remains the position of the Applicant that the two transmitter coils, driven in phase, are for markedly differing purposes than the Applicant's invention of a saturating coil and a separate second and higher frequency oscillating transmitter coil.

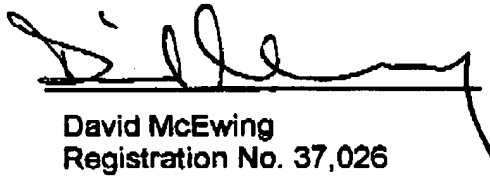
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SUMMARY

The Applicant has revised the specification and claims consistent with its past understanding of the Examiner regarding "near practical saturation." The Applicant has also executed the terminal disclaimers required to remove the provisional double patenting rejection. The Applicant will contact the Examiner to directly discuss the continued rejection of claims for §103 obviousness.

Respectfully Submitted,

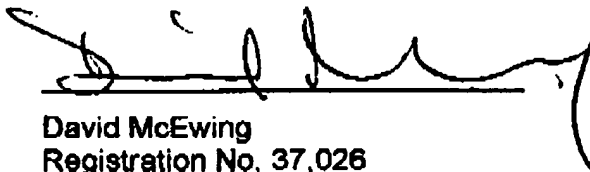


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Date: May 19, 2003

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited on May 19, 2003 with the United States Postal Service, postage prepaid, as Express Mail – Post Office to Addressee, in an envelope addressed to the MS Non-Fee Amendment, Commissioner of Patents, P.O. Box, 1450, Arlington, VA. 22313, Mailing Label No. EU441112634US.



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